



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

17

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/008,077

11/08/2001

Kenneth Joseph Aagaard

01-602-US

5352

26111 7590 05/17/2007
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

HENN, TIMOTHY J

ART UNIT	PAPER NUMBER
----------	--------------

2622

MAIL DATE	DELIVERY MODE
-----------	---------------

05/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/008,077	Applicant(s) AAGAARD ET AL.	
	Examiner Timothy J. Henn	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,7-43 and 80-98 is/are pending in the application.
- 4a) Of the above claim(s) 80-98 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-43 and 80-98 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11 April 2007 has been entered.

Election/Restrictions

2. Newly submitted claims 80-98 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 80-98 are directed to a system and method for servoing on a moving target within a dynamic scene through the use of a plurality of slave camera control units that control slave cameras based on communication with a master camera control unit while the original claims as presented are directed towards a multiple camera system for use in a broadcast environment which includes a master broadcaster computer that calculates camera telemetry (i.e. does not include a plurality of slave camera control units for calculating telemetry based on communications from a master camera control unit). Therefore, newly added claims 80-98 is considered independent and distinct from the originally claimed invention since they have different designs, modes of operation and are not disclosed as being capable of use together.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 80-98 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

3. Applicant should submit an argument under the heading "Remarks" pointing out disagreements with the examiner's contentions. Applicant must also discuss the references applied against the claims, explaining how the claims avoid the references or distinguish from them.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 7-9, 31-40, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5,714,997) in view of Paff (US 5,164,827) in view of Kochanski et al. (US 7,046,812).

[claim 1]

Regarding claim 1, Anderson discloses a multiple camera video system comprising: a plurality of cameras (Figure 4, Item 112) and a plurality of microphones (Figure 4, Item 122) positioned around a scene (Figure 1); a storage device for storing image and audio data (Figure 1, Items 13-15) and a system for combining audio from the microphones (Figure 17A; c. 2, ll. 35-47). However, Anderson does not explicitly disclose that each camera has an associated microphone. Official Notice is taken that it is notoriously well known in the art to provide cameras with built-in microphones. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the microphones of Anderson along with the cameras to reduce the total number of components which must be installed at the live-action event prior to recording. Anderson further discloses that it would be beneficial to change the positions and orientations of the cameras and microphones while recording (c. 12, l. 66 - c. 13, l. 9; c. 23, ll. 5-12) but does not disclose a system for achieving such a feature.

Paff discloses a similar recording system in which a plurality of cameras is placed around a scene (Figure 1). In the system of Paff, the plurality of cameras are segmented into a master camera and a plurality of slave cameras (Figure 6) and further includes a monitoring station which controls the master camera's pan, tilt and zoom variables (Figure 6, Items 10 and 11). In response to changing the master camera's field of view, the slave cameras correspondingly change their own field of view (c. 4, l. 6 - c. 5, l. 17; c. 7, l. 67 - c. 8, l. 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a monitoring station and divide the plurality of cameras of Anderson into a master camera and a

plurality of slave cameras to allow the cameras to change their fields of view while recording the live event and to ensure that every camera is trained on the same subject without manually changing the pan, tilt and zoom values of each camera individually.

The examiner notes that Paff uses parameters of the master and slave cameras to dynamically position the slave cameras based on changes in the master cameras field of view (e.g. c. 4, ll. 43-61) and further ensures that the magnification of the master camera and the slave camera is approximately the same (c. 7, l. 66 - c. 8, l. 15).

However, Anderson in view of Paff does not specifically disclose overlaying the sounds from each microphone in the same moment of time based on the speed of sound and a distance from each of the microphones to the target.

Kochanski discloses a system for combining the output from multiple microphones in which the audio signals from each microphone are delayed based on the speed of sound and a distance to the target object from the microphone (e.g. c. 1, ll. 11-16; c. 6, ll. 26-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to delay the audio signals and overlay them as described by Kochanski in the system of Anderson in view of Paff to create an audio signal in which the focal volumes are added and signals from else where are canceled out.

[claim 2]

Regarding claim 2, Paff discloses a master pan head which is remote from the plurality of cameras (Figure 6).

[claim 4]

Regarding claim 4, Paff discloses a master pan head including a zoom adjustment (Figure 6, Item 16).

[claim 7]

Regarding claim 7, Paff discloses a plurality of robotic pan heads upon which each of the plurality of cameras is mounted for remotely controlling said plurality of cameras (Figure 6; c. 3, ll. 58-62).

[claim 8]

Regarding claim 8, Paff discloses robotic pan heads including a pan and tilt function (Figure 6, Items 13 and 14).

[claim 9]

Regarding claim 9, Paff does not specifically disclose pan and tilt axes of the robotic pan heads which intersect at a point within the body of the plurality of cameras. Official Notice is taken that it is notoriously well known in the art to include pan and tilt axes of pan/tilt heads which intersect at a point within the body of the camera to allow independent control of pan and tilt functions of the cameras. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include pan and tilt axes which intersect at a point within the body of the slave cameras to allow independent control of the plurality of cameras.

[claim 31]

Regarding claim 31, Paff discloses a communications medium coupling the plurality of cameras to the master monitoring unit (Figure 6).

[claims 32 and 33]

Art Unit: 2622

Regarding claims 32 and 33, Anderson in view of Paff in view of Kochanski does not disclose a communication medium which is a multi-mode fiber optic cable. Official Notice is taken that the use of multi-mode fiber optic cable is notoriously well known in the art to provide large bandwidth. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multi-mode fiber optic cable as the communication medium of Anderson in view of Paff in view of Kochanski to obtain a system with a large amount of bandwidth.

[claims 34 and 35]

Regarding claims 34 and 35, Anderson in view of Paff in view of Kochanski does not disclose a communications medium which is a triaxial cable wherein a semiconductor in the triaxial cable is used to modulate camera telemetry information and the captured image. Official Notice is taken that the use of triaxial cables is notoriously well known in the art to provide low loss and good shielding properties. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a triaxial cable and a semiconductor medium within the triaxial cable to modulate the camera telemetry information and the captured image data to provide a communications medium with low loss and good shielding.

[claim 36]

Regarding claim 36, Anderson in view of Paff in view of Kochanski does not disclose a communications medium which is a wireless RF connection. Official Notice is taken that the use of wireless RF connections is notoriously well known in the art to not require large amounts of cables to be run. Therefore, it would have been obvious to

Art Unit: 2622

one of ordinary skill in the art at the time the invention was made to use a wireless RF connection to avoid running large amounts of cables.

[claim 37]

Regarding claim 37, Anderson discloses a computer (Figure 3, Item 14). The examiner notes that a "cam-A computer" is not a term well known in the art nor is it described in the application to any degree which would define the term to require a specific structure. Therefore, any normal computer can be considered a "cam-A" computer for the purposes of art rejection.

[claim 38]

Regarding claim 38, Anderson discloses a microphone computer for combining the outputs of the microphones (Figure 17A).

[claim 39]

Regarding claim 39, Anderson discloses the use of directional microphones (c. 21, ll. 48-57).

[claim 40]

Regarding claim 40, Anderson discloses microphones which are spaced around a target object which is being recorded (c. 21, ll. 48-57).

[claim 42]

Regarding claim 42, Kochanski discloses using the "speed of sound" to determine the proper delay for each microphone (c. 6, ll. 26-35). Since the speed of sound inherently changes with changes in altitude and relative humidity, it would be obvious to one of ordinary skill in the art to use and adjust the speed of sound taken at

Art Unit: 2622

set conditions for pressure and humidity to account for the changes at different pressures and humidity levels to obtain a more accurate result.

[claim 43]

Regarding claim 43, Anderson discloses an output of each of the microphones being connected to a digital mixer which is controlled by the microphone computer (Figure 17A).

6. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5,714,997) in view of Paff (US 5,164,827) in view of Kochanski et al. (US 7,046,812) in view of Heidmann et al. (US 6,057,833).

[claim 10]

Regarding claim 10, Anderson in view of Paff in view of Kochanski discloses a system connected to the master monitoring unit which allows for control over camera functions (Paff; Figure 6, Item 11), but does not disclose a station which is a paint station. Heidmann discloses that the value of television broadcasts can be increased by incorporating graphics illustrations using digital painting applications. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a digital painting application in the station of Paff to make the station of Anderson in view of Paff in view of Kochanski a "paint station" which can increase the value of the broadcasts created by the master and slave cameras.

[claim 11]

Regarding claim 11, Anderson in view of Paff in view of Kochanski in view of Heidmann discloses a paint station including a monitor (Figure 16, Item 11A); an input device (Figure 16, Item 11B) and a paint station computer running paint station software (Heidmann).

[claim 12]

Regarding claim 12, Anderson in view of Paff in view of Kochanski in view of Heidmann discloses a paint station which is capable of adjusting an attribute of at least one of the plurality of cameras (e.g. pan, tilt, zoom, generated video).

[claim 13]

Regarding claim 13, Anderson in view of Paff in view of Kochanski discloses a paint station which can control zoom and focus (Figure 16). Heidmann discloses a paint station which can adjust attributes including red, green and blue (e.g. color) paint (Figure 2, Item 258). However, Anderson in view of Paff in view of Kochanski in view of Heidmann does not disclose a paint station which controls shutter and iris values. Official Notice is taken that it is notoriously well known in the art to allow control of shutter and iris values to properly control the exposure value of the camera. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include shutter and iris control in the paint station of Anderson in view of Paff in view of Kochanski in view of Heidmann to properly control the exposure value of the master and slave cameras.

[claim 14]

Regarding claim 14, Paff discloses a station which can adjust the attribute on more than one of the cameras simultaneously (c. 7, l. 67 - c. 8, l. 15).

[claim 15]

Regarding claim 15, Paff discloses that the camera attribute can be adjusted while the camera telemetry is being automatically controlled by the master broadcaster computer (c. 7, l. 67 - c. 8, l. 15).

[claim 16]

Regarding claim 16, Paff discloses a paint station which is at least one-fifth of the number of cameras (Figure 6; claim 1).

7. Claims 17-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5,714,997) in view of Paff (US 5,164,827) in view of Kochanski et al. (US 7,046,812) in view of Kanade et al. (US 2002/0118286).

[claim 17]

Regarding claim 17, Anderson in view of Paff in view of Kochanski does not disclose a calibration station. Kanade discloses a similar system and further discloses that the cameras must be calibrated for focal length, zoom and geometric position prior to operation (Paragraphs 0032 - 0037). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a calibration station in the system of Anderson in view of Paff in view of Kochanski as taught by Kanade to properly calibrate the system so that the relationship of the cameras to the scene and to

Art Unit: 2622

each other are known.

[claims 18-20]

Regarding claims 18-20, see claim 17.

[claim 21]

Regarding claim 21, see Figure 6 and claim 1 of Paff.

[claim 22]

Regarding claim 22, Anderson in view of Paff in view of Kochanski lacks at least one additional video storage device. Kanade discloses a similar system and further discloses video storage devices coupled to each camera (Figure 2, Items 30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include video storage devices to allow storage of the video resulting from the cameras of Paff.

[claim 23]

Regarding claim 23, Anderson in view of Paff in view of Kochanski in view of Kanade lacks a video storage device which has a plurality of digital disc recorders. Official Notice is taken that it is notoriously well known in the art to record video from cameras onto digital video discs to allow easy transportation of the recorded video. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the plurality of video storage devices of Anderson in view of Paff in view of Kochanski in view of Kanade digital video disc recorders to allow easy transportation of the recorded video.

[claim 24]

Regarding claim 24, Anderson in view of Paff in view of Kochanski in view of Kanade lacks a video storage device which is a file server. Official Notice is taken that it is notoriously well known in the art to store video on file servers to allow remote access to the video. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the video storage devices of Anderson in view of Paff in view of Kochanski in view of Kanade file servers to allow easy remote access to the recorded video.

[claim 25]

Regarding claim 25, Anderson in view of Paff in view of Kochanski lacks a digital router connecting the output of each of the plurality of digital recorders and a first slow motion controller. Kanade discloses including a video playback controller to the plurality of video storage devices through a router (Figure 2; Paragraph 0030). However, Anderson in view of Paff in view of Kochanski in view of Kanade lacks a playback controller which is a slow motion controller. Official Notice is taken that it is notoriously well known to include slow motion controllers to allow the option of viewing the video in slow motion. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a slow motion controller in the system of Anderson in view of Paff in view of Kochanski in view of Kanade to view the recorded video in slow motion.

[claim 26]

Regarding claim 26, Kanade discloses a controller which is capable of selecting a router output from the plurality of recorders (Paragraph 0030).

[claim 27]

Regarding claim 27, Kanade discloses a controller which is capable of controlling each of the plurality of recorders simultaneously (Paragraph 0030).

[claim 28]

Regarding claim 28, Anderson in view of Paff in view of Kochanski in view of Kanade does not specifically disclose a controller which is capable of controlling the forward and backward motion of the output of each of the digital disc recorders. Official Notice is taken that it is notoriously well known in the art to allow both forward and backward motion to be played (e.g. play and rewind) to allow the user to view the video from a certain time period. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the controller capable of both forward and backward motion playback.

[claims 29 and 30]

Regarding claims 29 and 30, Anderson discloses a video system which broadcasts the captured video to a plurality of viewers (Figure 3, Item 50-1 through 50-p). Official Notice is taken that it is notoriously well known in the art for television viewers to record broadcasted signals in digital disc recorders including slow motion controllers for later replay and viewing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a digital disc recorder for each of the television viewers which records the video produced by

Art Unit: 2622

Anderson in view of Paff in view of Kochanski in view of Kanade to allow for later replay or viewing.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 11-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TJH

Application/Control Number: 10/008,077

Page 16

Art Unit: 2622

5/1/2007

A handwritten signature in black ink, consisting of stylized, overlapping loops and lines, positioned above the printed name.

VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600